**Homework 42** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Inductive Reasoning, Conjectures, and Counterexamples** Period:\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



For numbers 5- 8 write the next two numbers in the sequence.





**Some of the following conjectures are true and some can be proven false using a counterexample. If the statement is true, write the word TRUE in the box. For statements that are false, provide a counterexample.**

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| **11) Conjecture:** Everything that’s hot is fried chicken. | **12) Conjecture:** English is the only language spoken in the United States. |
| **13) Conjecture:** The square of an odd integer is odd. | **14) Conjecture:** If n is a real number then –n is a negative number. |
| **15) Conjecture:** The monthly high temperature in Abilene is never below 90°F two months in a row.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | The Monthly High Temperatures for Abilene, Texas | | | | | | | | | | | | | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec | | 88 | 89 | 95 | 97 | 99 | 101 | 103 | 107 | 101 | 97 | 91 | 89 | | |

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| **16) Conjecture:** The graph of a quadratic function  y = ax2+bx+c (a noteq 0) is always a parabola. | **17) Conjecture:** A quadratic equation always has two solutions. |
| **18) Conjecture:** Every quadratic function is factorable. | **19) Conjecture:** The vertex of a parabola will always lie on the y-axis. |

Mixed Review

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| 1. Simplify | 1. What is the area of triangle below? |
| 1. The diameter of a circle is 15 cm. What is the circumference of that circle? Leave the answers in terms of π. | 1. Simplify (4c + 6d)2 |
| 1. Simplify | 1. Factor b2 – 4b – 21 |
| 1. 40 + 42 + 4-2 | 1. Which of the following numbers has the greatest value? 2. 1.43 x 103 3. 1.41 x 104 4. 0.000014 x 105 5. 14300 6. 0.13 x 10 7 |

**Homework 43** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Conditional Statements** Period:\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
**Failure to write in complete sentences and show all work will result in LaSalle!**

**Rewrite the conditional statements in if-then form.**

|  |  |
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| 1) The measure of a straight angle is 180°.  **HYPOTHESIS:   CONCLUSION:**  **IF-THEN FORM:** | 2) Congruent segments are segments that are equal in measure.  **HYPOTHESIS:**  **CONCLUSION:**  **IF-THEN FORM:** |
| 3) Today is Monday if yesterday was Sunday.  **HYPOTHESIS:**  **CONCLUSION:**  **IF-THEN FORM:** | 4) A number is divisible by 4 if it is divisible by 8.  **HYPOTHESIS:**  **CONCLUSION:**  **IF-THEN FORM:** |

**Write the converse, inverse, and contrapositive for each conditional statement that is given. Then decided whether each statement is *true* or *false*.**

**True/False**

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| **6) Conditional Statement** | If the weather is warm, then we will go swimming. |  |
| **Converse** |  |  |
| **Inverse** |  |  |
| **Contrapositive** |  |  |

**True/False**

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| **7) Conditional Statement** | If x2 = 25, then x = 5 |  |
| **Converse** |  |  |
| **Inverse** |  |  |
| **Contrapositive** |  |  |

**True/False**

|  |  |  |
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| **8) Conditional Statement** | If x = -6 , then |x| = 6 |  |
| **Converse** |  |  |
| **Inverse** |  |  |
| **Contrapositive** |  |  |

**True/False**

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| **9) Conditional Statement** | If points D, E, and F are collinear, then DE + EF = DF |  |
| **Converse** |  |  |
| **Inverse** |  |  |
| **Contrapositive** |  |  |

**Write 2-3 conditional statements in if-then form and determine whether your statements are true or false. Then write a converse, inverse, and contrapositive statements for each of your examples.**

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| 10)  **Cats**  **Pets**  **Dogs** | a. IF-THEN: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  b. CONVERSE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  c. INVERSE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  d. CONTRAPOSITIVE: \_\_\_\_\_\_\_\_\_\_\_\_\_\_  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | a. T or F  b. T or F  c. T or F  d. T or F |

Mixed Review

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| 1. Simplify (2)2 | 1. If the circumference of a circle is 24π inches, how many inches long is the radius of the circle? |

**Homework 44** Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Deductive Reasoning** Period:\_\_\_\_\_Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_   
**Failure to write in complete sentences will result in a LaSalle. (You know what a complete sentence is.)**

Use the Law of Syllogism to write a statement (C) that would follow if statements (A) and (B) were true.

1. (A) If 2 is acute, then 3 is obtuse.

(B) If 3 is obtuse, then 4 acute.

(C)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. (A) If you eat too much turkey, then you get sick.

(B) If you get sick, then you will not be able to go to school.

(C)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. (A) If an angle measure is more than 90, then it is not acute.

(B) If an angle is not acute, then it is obtuse.

(C)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. (A) Jasmine is taller than Ms. Thai.

(B) Ms. Thai is taller than Maribel.

(C)\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Determine whether the students used Inductive Reasoning or Deductive Reasoning to arrive at the conclusion. Explain your reasoning.

1. Nicole knows that all students in Ms. Yarrington’s 5th period have English homework tonight. Her friend Michael is in Ms. Yarrington’s 5th period. Therefore, Michael has English homework tonight.

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1. Isabel read one of the Twilight series books and it bored her. She concludes that all of the Twilight books are boring.

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1. Grant notices that the Footlocker by his house and the Footlocker by his school are having sales. He concludes that all Footlockers are having a sale currently.

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1. Sandra is convinced that all cartoons are for kids. She just heard from her friends about a new cartoon called “Phineas and Ferb” and she tells her friends, “That show is childish.”

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**Mixed Review**

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| 1. The expression 2c2 and 4c + 16 are equivalent when c is equal to what values? (Solve for c) | 1. In standard coordinate plane, a line m passes through the points (2, -5) and (-3, 7). What is the slope of line m? |
| 1. Smith Flooring company sells vinyl peel and stick floor tiles are1 foot square. What is the minimum number of these tiles needed to tire the entire floor of 14 foot by 16 foot rectangular room and the adjoining bathroom of 10 foot by 16 foot? | 1. Simplify 2 |
| 1. Simplify (4i + 5)(-3i – 2) | 1. Simplify |
| 1. In standard (x, y) coordinate plane, point M with coordinate (-4, 7) is the midpoint of CD, and C has coordinate (3, 8). What is the coordinate of D? | 1. Given the b is positive real number, solve for b:   c = b2 – 16d |
| 1. The height in feet h, of the roof of a house is given by the equation -16t2 +8t + 70, where t is the time is seconds. How long would it take an object to land on the ground if it were dropped from the roof of the house? | 1. What are the roots of the equation w2 + 5w = 36? |

**Homework 45 Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Use Algebraic Explanations to Provide an Argument Period:\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Failure to show all work and write in complete sentences will result in LaSalle!**

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| 1) Complete the logical argument by giving a reason for each step.    a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  c. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ | | 2) Solve the equation. Write a reason for each step.  -12x = 28 – 16x *(format like this)*  Equation Reason: |
| 3) Solve the equation. Write a reason for each step.  7(x-11) = 12 x - 122 | 4) Solve the equation for r. Write a reason for each step.  s = 4(2r +5) | |
| 5) Solve for r. Write a reason for each step. | 6) Solve for r. Write a reason for each step. | |

Mixed Review

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| 1. The circumference of a certain circle is 10π inches. What is the area of that circle, in terms of π? | 1. Factor x2 + 2x – 15 |
| 1. What is the sum of the solutions t the quadratic equation 9x2 – 64 = 0 | 1. X = {- 5, 3} is the solution set for what quadratic equation? |
| 1. Simplify | 1. Last year, Naomi’s garden was 5 foot by 8 foot rectangular plot. He wants to produce more food this year, so she plans to triple the area of her garden. According to Naomi’s plan, what will be area of her new garden? |
| 1. The figure below is a hexagon, and ABCD is a rectangle that is contained in that hexagon. All measurements on the figure below are in centimeters. What is the area of the entire hexagon?   A 5 B  4 4  6 4 4 6    4 C 5 D 4 | 1. In the figure below, all angles are right angles. Find the area of the shaded region.   28 in    24 in  12 in  24 in    20 in      16 in 16 in    28 in |